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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,499	09/22/2004	Mark Yamazaki	81102778 / FMC 1781 PUS	5498
28395 7590 12/17/2007 BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			EXAMINER PIGGUSH, AARON C	
			ART UNIT 2838	PAPER NUMBER
			MAIL DATE 12/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/711,499

Applicant(s)

YAMAZAKI ET AL.

Examiner

Aaron Piggush

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7 and 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Aoki (US 6,960,152).

With respect to claim 1, Aoki discloses a method of controlling charging of a power source of a hybrid vehicle, the hybrid vehicle comprising a set of power sources including a primary power source and at least one secondary power source, and an electrical machine adapted to be driven by at least one member of the set of power sources, the method comprising: determining a maximum output torque level of the primary power source (Fig. 12, col 11 ln 32-49, and col 22 ln 29-47); determining a state of charge of the secondary power source (col 8 ln

35-38); determining a charge torque modifier value based on the maximum output torque level and the state of charge (col 11 ln 15-64, col 22 ln 39-59, col 24 ln 38-55, and col 2 ln 19-36); determining a target torque level for the electrical machine based on the charge torque modifier value (col 11 ln 23-49, col 24 ln 64 to col 25 ln 48, and col 2 ln 19-36); and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source (col 22 ln 39-59 and col 11 ln 15-64).

With respect to claim 2, Aoki discloses wherein the step of determining the maximum output torque level further includes determining whether the primary power source is providing output torque (col 10 ln 60 to col 11 ln 53).

With respect to claim 3, Aoki discloses wherein the step of determining the charge torque modifier value further comprises comparing a state of charge of the secondary power source to a threshold value and selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value (col 11 ln 15-64 and Fig. 7).

With respect to claim 4, Aoki discloses wherein the first adjustment value is greater than the second adjustment value (col 29 ln 3-14 and col 11 ln 15-64). Please note that there are multiple adjustment values wherein as the SOC becomes less, the charge/discharge requirement (which affects the charge torque modifier) becomes greater.

With respect to claims 5 and 6, Aoki discloses wherein the first adjustment value is a constant based on the maximum output torque level and the second adjustment value is based on the maximum output torque level and the state of charge (col 29 ln 3-14 and ln 22-34 and col 11

In 15-64). Please note that the claim language does not require that the second adjustment value is not a constant or that the first adjustment value cannot also be based on the state of charge.

With respect to claim 7, Aoki discloses wherein the second adjustment value decreases linearly as the state of charge increases (col 29 ln 3-14 and ln 22-34 and col 11 ln 15-64). The “linearly” term is reasonably met by the reference because his equations for the requirement outputs/torques are all linear based equations, implying that any adjustment values will also be linear in nature.

With respect to claims 9 and 10, Aoki discloses wherein the primary power source is an internal combustion engine (no. 11 in Fig. 6, col 1 ln 9-25, and well known that hybrid vehicles use an internal combustion engine) and wherein the at least one secondary power source is a battery (no. 43 in Fig. 6, col 1 ln 9-25, and well known that hybrid vehicles use a battery as a power source).

With respect to claims 11 and 12, Aoki discloses wherein the electrical machine is a starter-alternator and wherein the electrical machine is a motor-generator (no. 25 and 16 in Fig. 6 and Fig. 15-17). To clarify, it is well known that motors of vehicles include a starter and that AC generators and alternators are synonymous (all of which are found in hybrid vehicles).

With respect to claims 13 and 14, please see the rejection of claims 1-7 above. Additionally, the determination of whether the electrical machine is being driven by the engine and is charging the power source is also met (no. 51, 44, 46, 47, and 49 in Fig. 6, Fig. 7, and col 11 ln 15-64).

With respect to claim 15, please see the rejection of claim 1 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (US 6,960,152).

With respect to claims 8 and 16, Aoki discloses wherein the step of determining a charge torque modifier value is based on the state of charge and an actual output torque of the primary power source (col 11 ln 15-64, col 22 ln 39-59, col 24 ln 38-55, and col 2 ln 19-36), however, does not expressly disclose wherein the actual output torque is expressed as a percentage of the maximum output torque level.

Although, it should be noted that it is well known to one of ordinary skill in the art that expressing values as a percentage involves simple mathematical computations, wherein any ratio between two different values represents a percentage. It does not appear that the applicant has disclosed that expressing the output torque as a percentage of the maximum output torque level solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with using the actual output torque.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to express the actual output torque as a percentage of the maximum output torque level in the device of Aoki, so that a simplified value could be displayed to or collected by the driver/user of the device (providing more information during control of the vehicle).

With respect to claim 17, please see the rejection of claims 1-7, 13, and 8 above.

Furthermore, the provision of a consistent level of vehicle acceleration as the accelerator pedal is actuated is also met (col 1 ln 51 to col 2 ln 63 and Fig. 26 and 28).

With respect to claims 18-20, please see the rejection of claims 3-6 above.

Response to Arguments

5. Applicant's arguments filed August 2, 2007 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues that Aoki does not disclose determining a maximum output torque level of the primary power source.

Examiner respectfully disagrees for the following reasons: First, the examiner also included Fig. 12 in the citation for the rejection of claim 1, wherein the applicant states "note the higher torque curves in Fig. 12" when referring to the comparison of engine torque TE1 to TE3. If the higher torque curves of Fig. 12 are considered to be maximums by the applicant, then why wouldn't they meet the requirement of determining a maximum output torque. Regardless, there are multiple maximum outputs on the graph of Fig. 12, depending on the accelerator pedal position AP and the engine rotational speed NE. The relation between the output torque level and controlling charging of a power source is clearly mentioned in the citations provided in the office action, focusing on col 11 ln 15-31, wherein it is stated that a battery **charge**/discharge requirement output calculation processing mechanism ... to calculate a battery **charge**/discharge requirement output PB based on the battery remaining charge SOC by reading the battery remaining SOC from the battery remaining charge detection device ... a vehicle requirement output calculation processing mechanism ... calculates a vehicle requirement output PO = PD

+PB” (PD is the driver requirement output). The PO calculation is used in the determination of the target torque and rotational speed of the vehicle. Along with the explanation above, please note col 11 ln 50-64 and col 22 ln 39-59, and col 2 ln 19-36 for further clarification of the torque modifier value.

With respect to claim 2, the citation 10 ln 60 to col 11 ln 53 recites “... then the vehicle control device determines whether the engine is stopped.” This is part of the determination of whether the primary power source is providing output torque or not.

With respect to claim 3, Aoki discloses calculating a battery charge/discharge requirement (col 11 ln 15-64), including determination of the remaining charge SOC (please also see the response to the arguments for claim 1 above). This requirement is used in the determination of the vehicle output requirement, which is used in the determination of the target torque and rotational speed. There are clearly multiple adjustment values dealing with the battery needing to be charged and dealing with the battery needing/able to be discharged (otherwise, how would the system know if the battery should be charged or if it could be discharged, and the basis of the SOC determination would serve no purpose). Adjustment values can also be seen by the description that “... when the battery remaining charge SOC becomes less, the battery charge/discharge requirement output PB becomes greater” (col 29 ln 3-14).

With respect to claim 4, concerning the applicant's argument that the examiner's statement is not explicitly or implicitly disclosed in Aoki, please see the above response with emphasis on col 29 ln 4-6.

With respect to claims 5 and 6, please see the above responses. As noted in the previous rejection, the claim language does not require that the second adjustment value is not a constant or that the first adjustment value cannot also be based on the state of charge.

With respect to claim 7, the argument that Aoki's relationship between the values is opposite of claim 7 is deemed incorrect. Just because the battery charge/discharge requirement output PB becomes greater as the battery SOC becomes less, that does not mean that the relationship between the two is not linear. For example, the equations $y = x + b$ and $y = -x + b$ are both linear equations, even though they have opposite slopes.

With respect to claims 13-15, the subject matter of those claims is disclosed in the citations presented in the rejections of claims 1-7, regardless of slight variations in the wording. The determination of whether the electrical machine is being driven by the engine and is charging the power source is met by the additional citation provided in the previous office action (no. 51, 44, 46, 47, and 49 in Fig. 6, Fig. 7, and col 11 ln 15-64).

With respect to claims 8 and 16, the previous rejection provided that it is obvious to express a value as a percentage, since it involves only simple mathematical computations, wherein any ratio between the two different values represents a percentage. The values necessary for representing this percentage are seen in the Aoki reference (see rejection of claims above). This was made under a U.S.C. 103 rejection, wherein it was also stated that it does not appear that the applicant has disclosed that expressing the output torque as a percentage of the maximum output torque level solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with using the actual output torque.

With respect to claim 17, the subject matter of that claim is disclosed in the citations presenting in the rejections of claims 1-7, 8, and 13, regardless of slight variations in the wording. The provision of a consistent level of vehicle acceleration as the accelerator pedal is actuated is met by the additional citation provided in the previous office action (col 1 ln 51 to col 2 ln 63 and Fig. 26 and 28).

With respect to claims 18 and 19, although the language presented is not identical to the previous claims rejected, the subject matter is. The citations provided in the previous rejections of the related claims are still deemed to meet the claim language presented by the applicant.

With respect to claim 20, please see the response to arguments above, emphasizing claims 3-6.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP


BAO Q. VU
PRIMARY EXAMINER